



Electricity Supply Adequacy in the West

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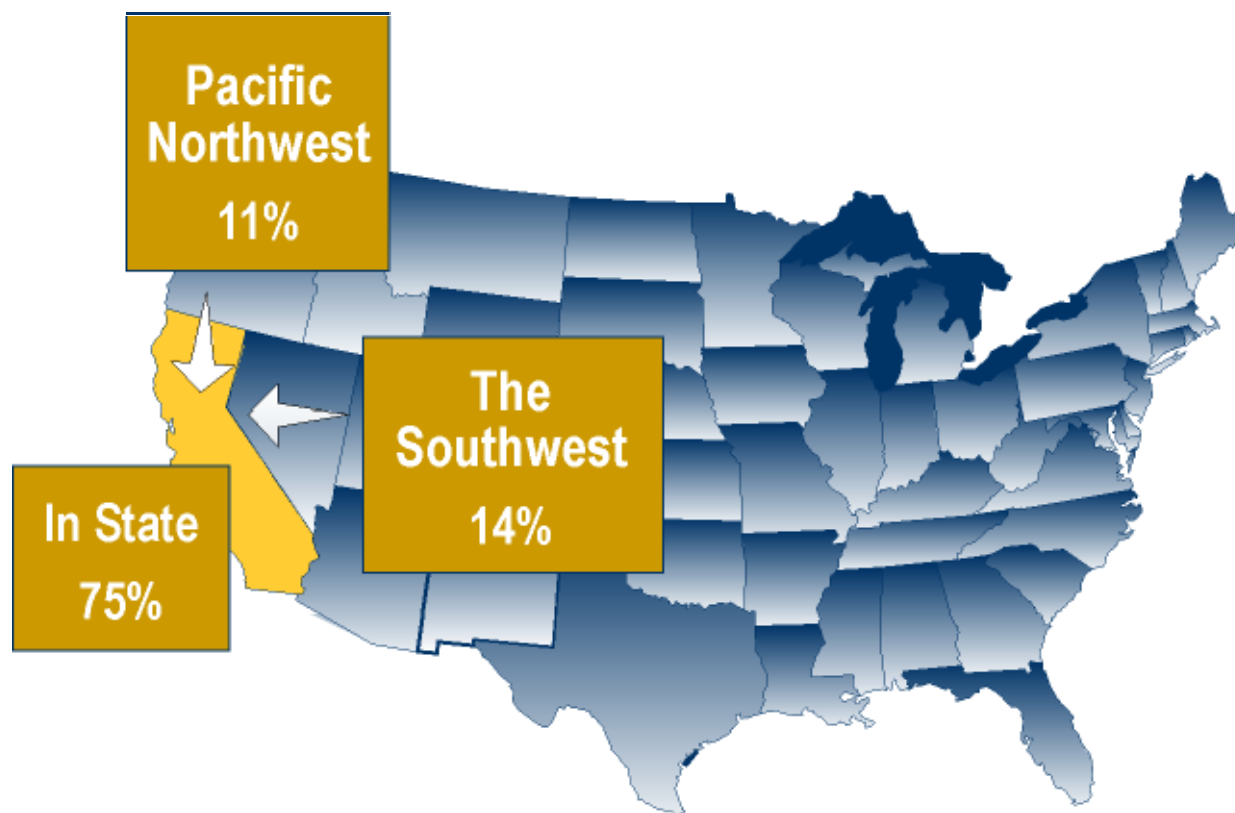
Is There a Problem?

- The Summer of 1998
 - Record High Temperatures throughout the West
 - Record High Electricity Demand
 - Four Stage Two Emergency Alerts in California
- The Summer of 1999
 - Cool Summer... But
 - Record High Electricity Demand



ELECTRICITY SOURCES

Twenty five percent of the state's electricity comes from out-of-state generation



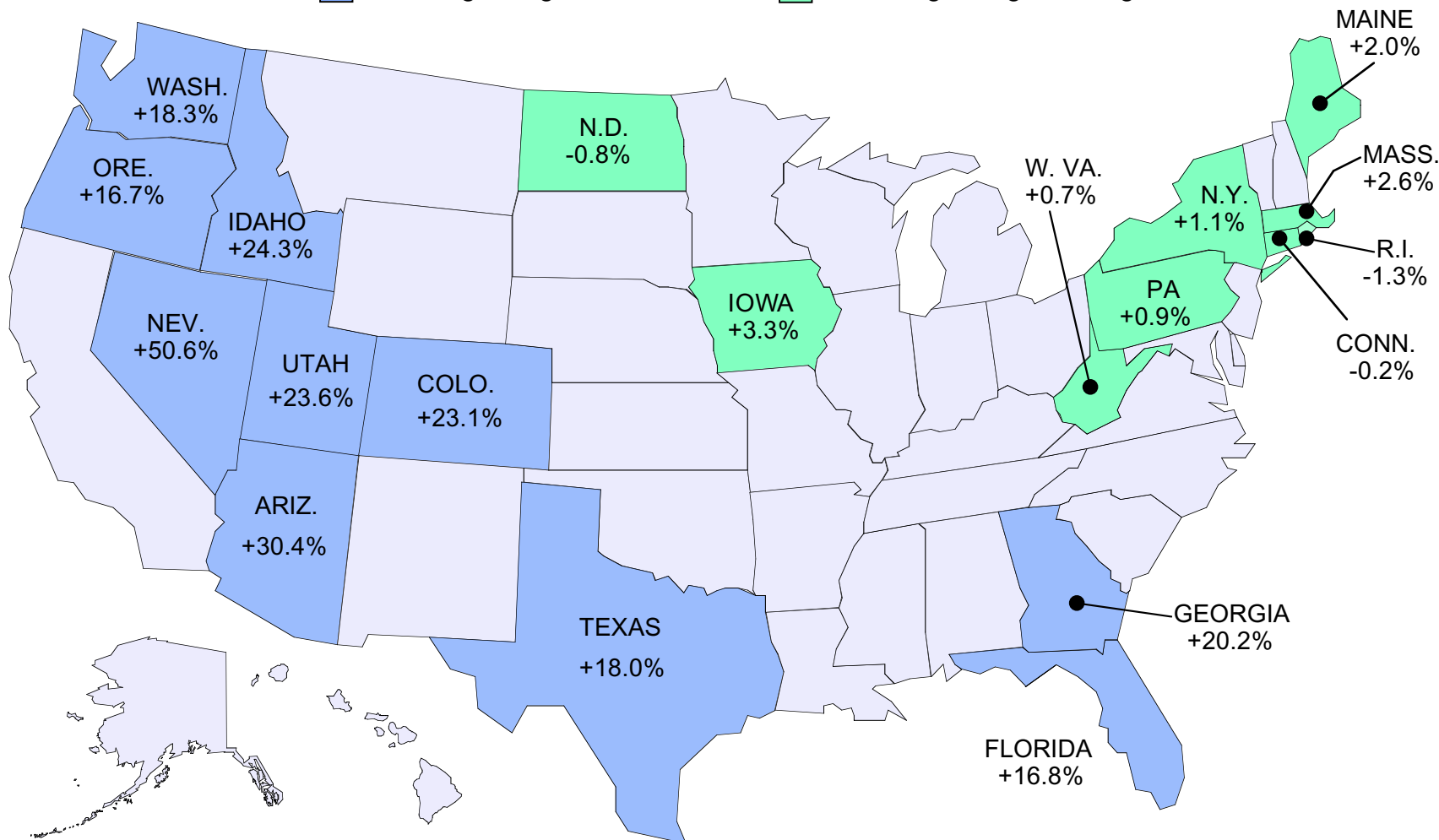


A Country in Transition

Percentage changes in population from April 1, 1990 through July 1, 1999

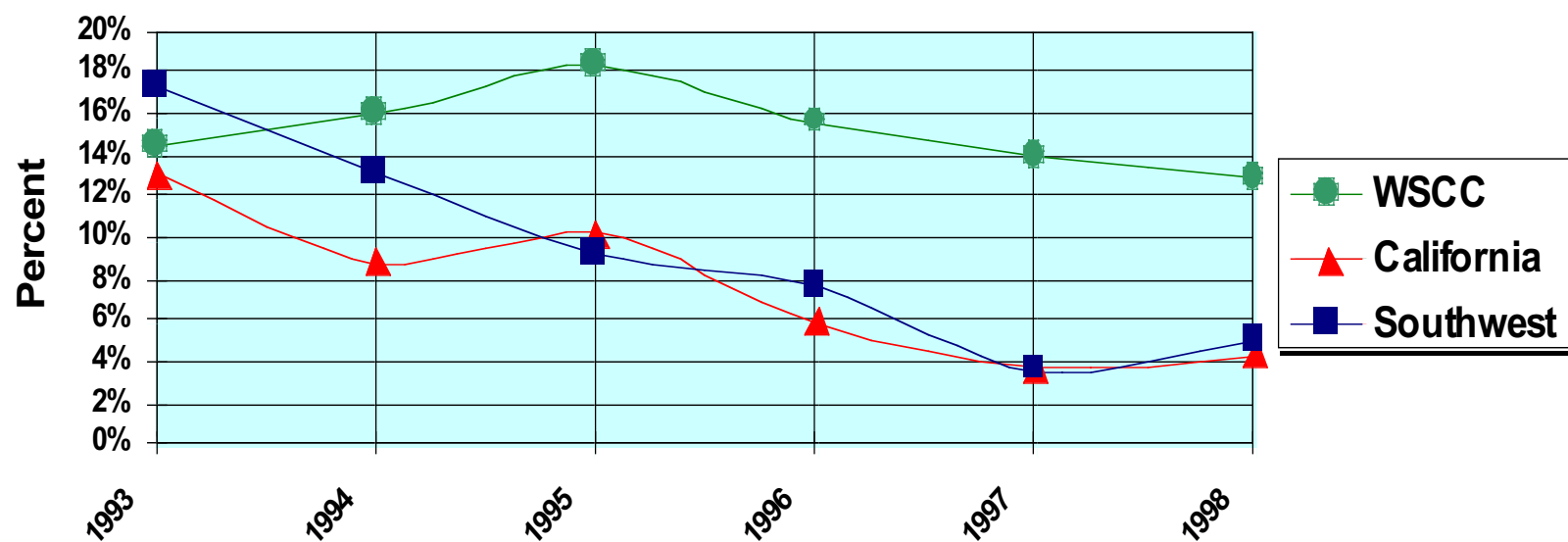
Fastest-growing states

Slowest-growing/shrinking states





Non-Coincident Peak Demand Reserve Margins 1993-1998





Similar Conclusions

- Bonneville Power Administration
 - The White Book, 1999
- National Electricity Reliability Council
 - Summer of 1999 Assessment Report
- ICF Kaiser
 - Early 1999
- Northwest Power Planning Council
 - December 1999
- US Department of Energy
 - January 2000



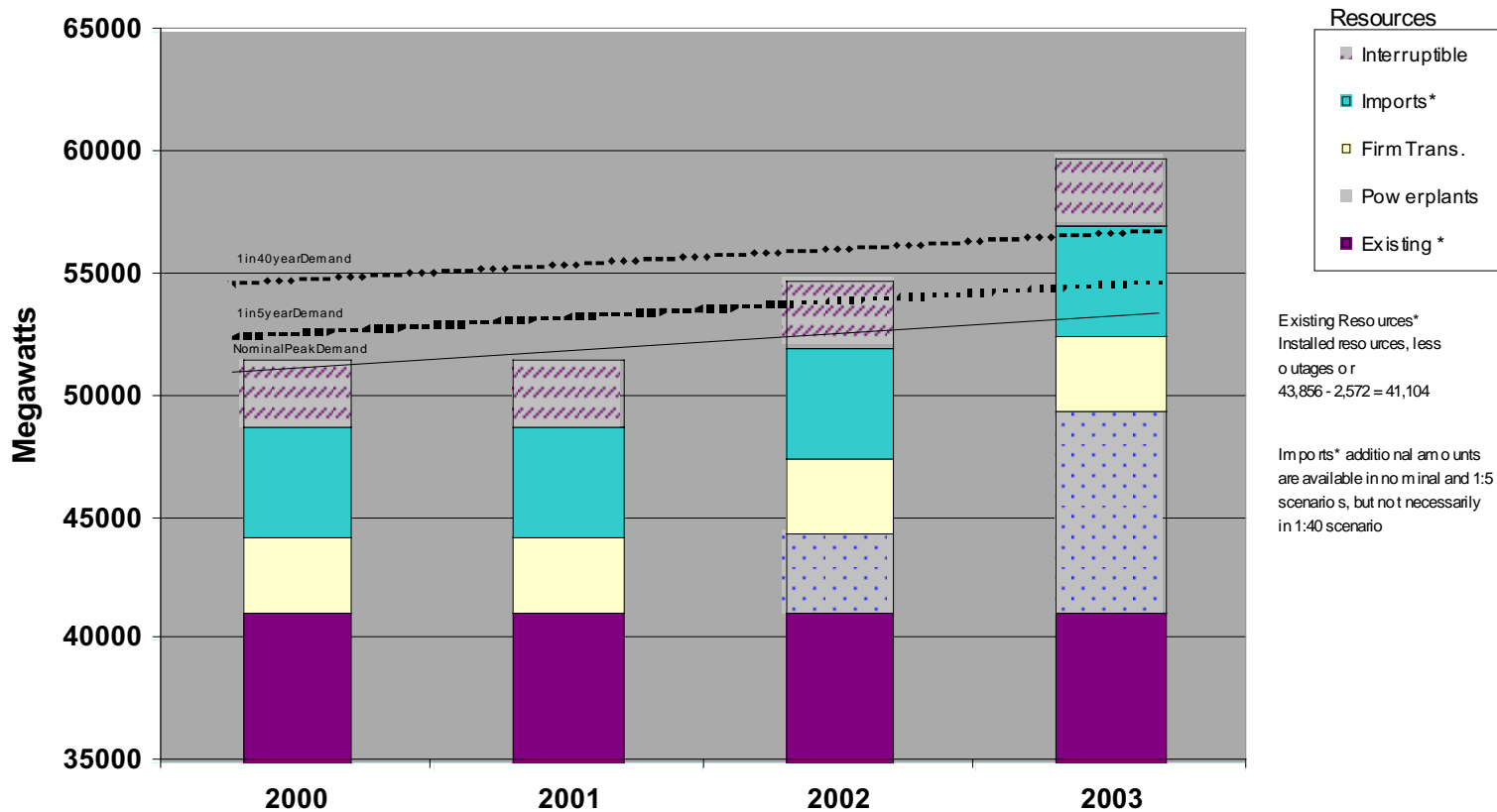
Peak Capacity Needs

MWs of Capacity

	Temperature Conditions			
Year	Average	1-in-5	1-in-10	1-in-40
1999	(725)	1,182	2,527	3,940
2000	397	2,341	3,714	5,155
2001	1,541	3,524	4,924	6,394
2002	2,707	4,731	6,159	7,658
2003	3,897	5,961	7,418	8,947
2004	5,111	7,216	8,702	10,262
2005	6,349	8,496	10,012	11,603

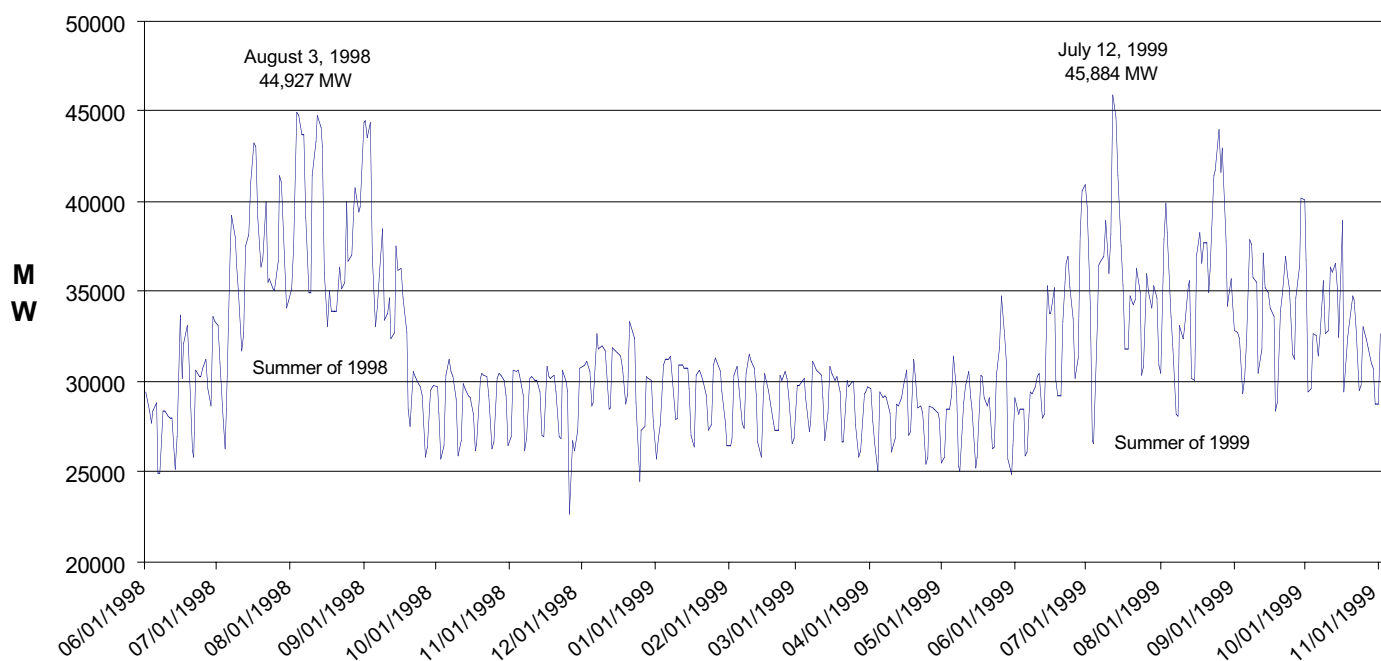


CAL ISO Peak Demand Load Resource Balance at 7% Operating Reserve



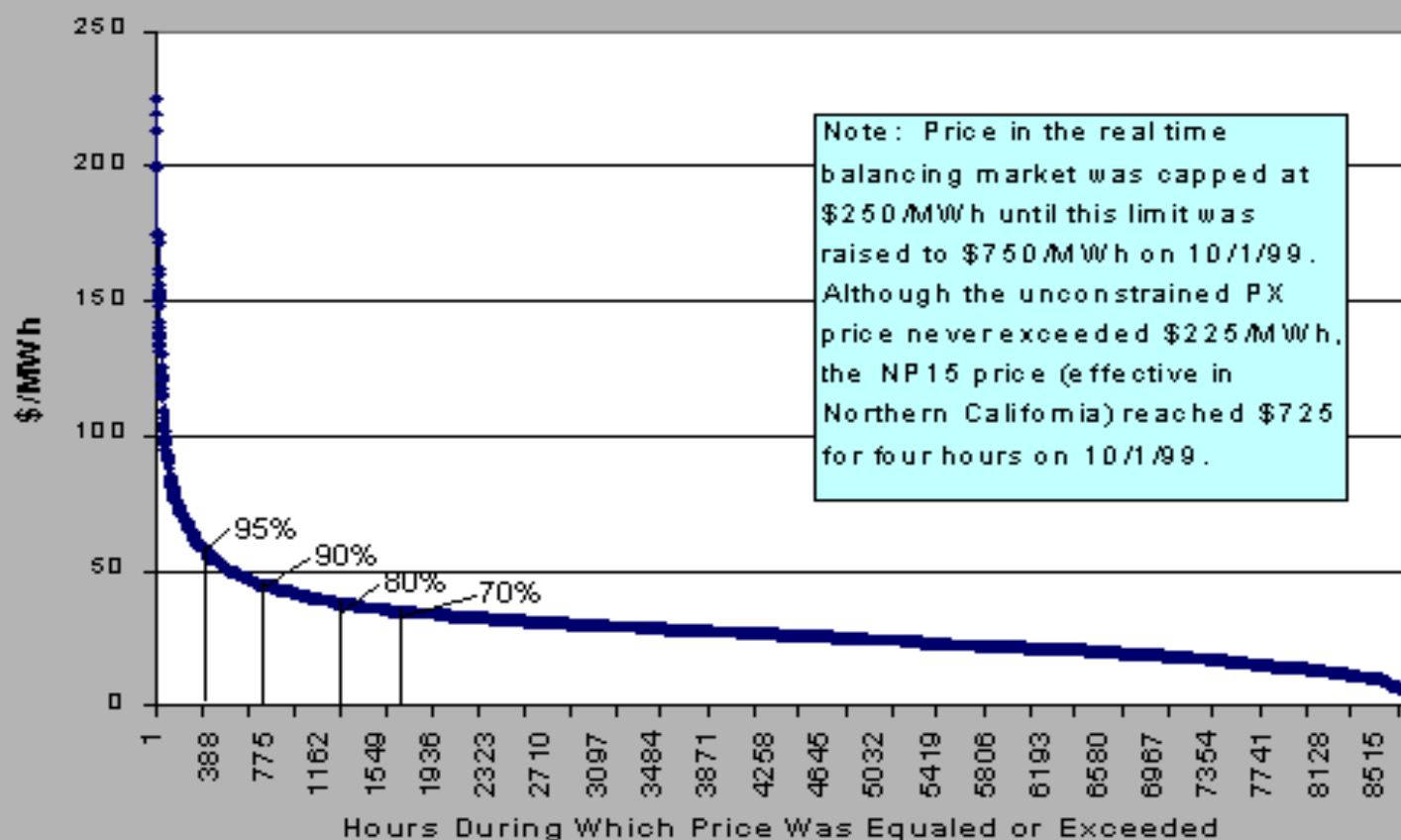


Daily Peak Loads California ISO Control Area *June 1998 - October 1999*





Non-Continuous Duration of Price Levels, Day-Ahead Unconstrained PX, 1999





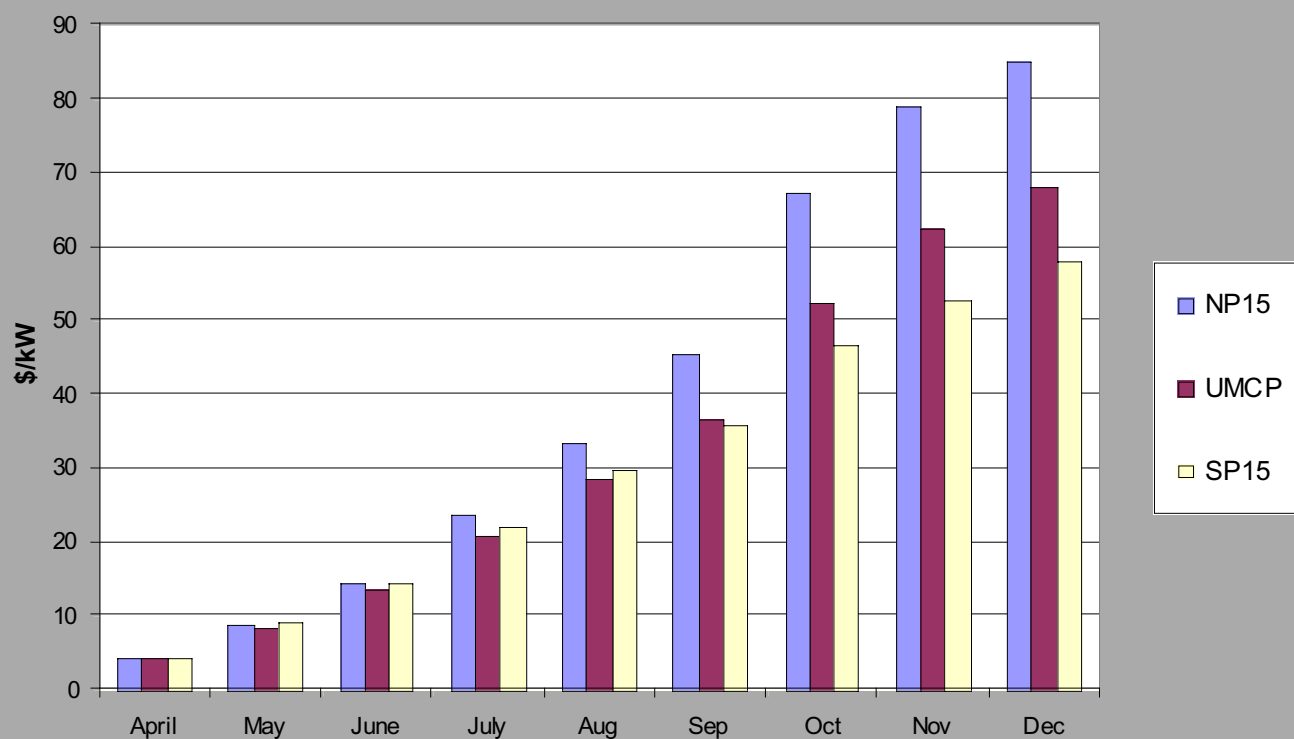
Is New Entry Cost Effective?

- New combined cycle need to receive \$80 - \$100/kw to cover total costs.
- New generators would have lost money in 1998.
- In 1999, a new efficient combined cycle (6800 BTU/KWh) might have covered its cost in Northern California's energy market. It would have lost money in Southern California.
- Ancillary services are currently adding 11% to total generator revenues.
- Reliability must-run contracts are adding 8-10% to total generator revenues.



Accumulated Earnings of a CCGT, 1999

Burning Gas at 6800 Btu/kW h





California's Response to Supply Adequacy

- No state agency has sole responsibility and authority to ensure adequacy.
- Using market simulations, identify supply/demand shortfalls.
- Inform agencies and market participants.
- Public debate over options and priorities
- Coordinate responses to modify market rules to enhance market responses.
- Monitor situation and identify contingency plans.



What Actions Are Needed?

- Enable electricity users to respond
 - To prices if they choose to do so
 - To sell their load for compensation
- Encourage voluntary load reduction
- Educate about the value of energy efficiency
- Search for existing, but underused supplies
- Work towards a regional solution



What's Happening

- Cal ISO/Cal PX
 - ISO Load Participation by Summer 2000
 - PX Market Improvements
- Utilities
 - Load Curtailment Proposals by Summer 2000
- Public Utilities Commission
 - Rate Design
- Energy Commission
 - Siting Cases, Regulations, Assessments